

**REMARKS**

Claims 1, 3-20, 22-39 and 41-48 are currently pending in the subject application and are presently under consideration. Claims 1, 20 and 39 are amended for emphasis. Support for the amendments may be found at least, for example, in the specification as set forth in U.S. Pub. No. 2005/0215196 at paragraphs [0032], [0048] and [0057].

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

**I. Examiner Interview**

Applicant's representative thanks Examiner Rego for the courtesies extended in the telephonic interview held April 13, 2010. In the interview, the independent claims were discussed in light of the cited references. No agreement was reached. Moreover, dependent claim 48 was discussed in some detail. Applicant's representative notes that if allowability of a dependent claim, such as claim 48, is indicated, re-writing the dependent claim(s) into independent form will be considered.

**II. Rejection of Claims 1, 3-6, 8-11, 13-16, 18-20, 22-25, 27-30, 32-35, 37-39, 41-43, and 46-48 Under 35 U.S.C. §103(a)**

Claims 1, 3-6, 8-11, 13-16, 18-20, 22-25, 27-30, 32-35, 37-39, 41-43, and 46 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gandolfo (US 7,184,767) in view of Choi (US 6,967,944). Withdrawal of this rejection is respectfully requested for at least the reason that, even in combination, Gandolfo and Choi fail to disclose or suggest all of the claimed features.

Independent claim 1 as amended recites

A method of communications from a piconet, comprising:  
by an edge terminal of the piconet,  
engaging in intra-piconet communications;  
receiving a pilot signal from a foreign terminal outside the piconet;  
determining a strength of the pilot signal;  
exchanging messages with the foreign terminal if the pilot signal strength is below a threshold; and  
establishing a peer-to-peer connection with the foreign terminal.

Concerning amended independent claim 1, the combination of Gandolfo and Choi is deficient at least as to "by an edge terminal of the piconet," as recited. Gandolfo and Choi are still further silent regarding "engaging in intra-piconet communications ... [and] establishing a peer-to-peer connection with the foreign terminal," as additionally recited.

To the contrary, according to Gandolfo,

In the indirect overlap situation disclosed in FIG. 6C, device A-2 522a learns about the existence and settings of network B 505b **by monitoring its beacon messages that are forwarded by device B-2 522b**. Device A-2 522a then **forwards this information to the controller 510a for network A 505a**. Similarly, device B-2 522b learns about the existence and settings of network A 505a **by monitoring its beacon messages that are forwarded by device A-2 522a**. Device B-2 522b then **forwards this information to the controller 510b for network B 505b**.

(Emphasis added.) The above is consistent with the architecture of Gandolfo's system, which is a master-slave architecture, not a peer-to-peer arrangement as recited in claim 1. In particular, note that the above-quoted passage explicitly states that device 522a monitors the beacon messages of controller 505a of network 505b, not that device 522a receives a pilot signal of device 522b. More specifically, in Gandolfo, a "beacon" or "beacon message" is a controller signal from a controller, not a pilot signal from a foreign terminal as recited in claim 1.

Regarding beacons or beacon messages, see, e.g., Gandolfo at col. 3, lines 48-54:

The controller 310 sends the beacon 460 to all of the devices 321 325 at the beginning of each super-frame 450. The beacon 460 tells each device 321 325 the duration or super-frame 450 as well as other information about its MAC address, e.g., the size and duration of the contention access period 470, if any, and the duration of the contention free period 480;

See also, e.g., col. 5, lines 52-54: "The network information data may be exchanged via first and second ultrawide bandwidth beacons transmitted by the first and second controllers, respectively"; and col. 12, lines 45-47: "[B]eacon message[s are] transmitted by the two controllers 510a, 510b."

In contrast, according to amended claim 1, operations "**by an edge terminal of the piconet**" include "receiving a **pilot signal** from a foreign terminal outside the piconet ... determining a strength of the pilot signal ... exchanging messages with the foreign terminal if the pilot signal strength is below a threshold ... and establishing a peer-to-peer connection with the foreign terminal" (emphasis added).

The Office Action (p. 27) in fact explicitly recognizes that Gandolfo is deficient as to the foregoing, stating:

In abstract, Gandolfo teaches if they have indirect overlap (Fig 6C), one device from each network will together in a child network, and the controllers will pass the network information via the devices in this child network. *That means when controller 510a detects that receiving pilot signal from device 522b is below the threshold, establishing a peer-to-peer (ad-hoc) connection with its edge terminal 522a with the foreign terminal 522b in order to exchange messages.*

(Emphasis in original.) Note that in the above, the Office Action correctly observes that "**controllers** will pass the network information via the devices in this child network" and "**controller 510a** detects" (emphasis added), although the Office Action is incorrect as to the "pilot signal"; as discussed earlier, controller 510a does not receive a pilot signal from a foreign terminal, but instead receives a forwarded beacon message from controller 510b. In other words, it is not "**by an edge terminal of the piconet**" that operations are performed, but instead by the controllers 510a, 510b.

Moreover, there is simply no suggestion in Gandolfo that controllers 510a, 510b perform any operations corresponding to claim 1's "determining a strength of the pilot signal ..." and "exchanging messages with the foreign terminal if the pilot signal strength is below a threshold ...." The Office Action (p. 4) also acknowledges the above, stating "... **Gandolfo doesn't specifically teach in the disclosure that exchanging messages with the foreign terminal if the pilot signal is below the threshold ...**" (emphasis added). However, the Office Action goes on to argue

[T]he reason for forming child network and engaging peer-to-peer (ad-hoc) communication is to when the controller 510a (master terminal) could not connected with device B-2 522b because device B-2 522b located outer range of cell

550a, so the pilot signal strength must be less than threshold, by forming peer-to-peer (ad-hoc) connection with its edge terminal 522a with the remote or the foreign terminal 522b willable to engage communication with each other.

However, as noted previously, Gandolfo's controllers 510a, 510b do not receive pilot signals of any kind, but instead receive **forwarded beacon signals** from **each other**. Moreover, Gandolfo is silent regarding any operation as to determining strength of the beacon signals, or exchanging messages based on such a determination.

To further elaborate on the deficiencies in Gandolfo, as touched on previously, Gandolfo fails to disclose or suggest the above-noted features at least in part because Gandolfo describes a master-slave connection, not a peer-to-peer connection as claimed. In the "Response to Arguments" section, the Office Action (p. 26) contends that Gandolfo discloses the claimed peer-to-peer arrangement because Gandolfo states, in col. 4, lines 20-24, "Some of these objects are accomplished by way of discovering and updating the wireless links between multiple wireless networks and building communication paths across the multi-hop ad-hoc network," in particular arguing that an "ad-hoc network" corresponds to a peer-to-peer network. In response, it is observed that, assuming only for purposes of argument that some ad-hoc networks include peer-to-peer connections, this in no way is countervailing of the fact that no structure disclosed in Gandolfo corresponds to the features recited in claim 1, and that therefore Gandolfo fails to support the asserted rejection. It is not in dispute that peer-to-peer connections are known; however, a general reference to peer-to-peer connections is not sufficient to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a). In view of the foregoing, what Gandolfo does describe is a master-slave arrangement with controllers 510a, 510b acting as the masters.

Moreover, Choi does not remedy any deficiencies in Gandolfo. The Office Action (p. 5) contends,

However, related art, Choi, Col 5, lines 9-31, teaches the AP 14 updates the table to reflect the received signal strength level for each active STA then newly allocates time allocation for all STAs. Based on the updated information, the AP 14 can determine which stations are hidden from each other. If the received signal quality degrades below a set limit, a subsequent frame message from the AP 14 to the active STAs is transmitted to

designate time allocation for multiple peer-to-peer (ad-hoc) transmissions.

(Emphasis in original.) In response, it is observed that Choi relates generally to a WLAN (wireless local access network) with a central access point (AP) and multiple stations (STA). The AP collects connectivity information from the STAs and allocates resources accordingly. See, e.g., Choi at col. 6, lines 4-23. However, Choi never suggests, for example, "**by an edge terminal of the piconet**" include "receiving a **pilot signal** from a foreign terminal outside the piconet ... determining a strength of the pilot signal ... exchanging messages with the foreign terminal if the pilot signal strength is below a threshold ... and establishing a peer-to-peer connection with the foreign terminal" (emphasis added) as recited in claim 1. Instead, as in fact is stated in the portion of Choi cited in the Office Action above, the AP 14, not a STA, controls operations, using "frame messages."

As to independent claim 20 as amended, along the above lines, Gandolfo and Choi fail to support the rejection for at least the reason that, even in combination, they fail to disclose or suggest "a receiver configured to, operating as a component of an edge terminal of the piconet, detect a pilot signal from a foreign terminal outside the piconet and determine its strength," and "a controller configured, operating as another component of the edge terminal of the piconet, to exchange messages with the foreign terminal to facilitate establishing a peer-to-peer connection with the foreign terminal if the pilot signal strength is below a threshold."

Similarly, regarding amended independent claim 39, Gandolfo and Choi are deficient at least regarding "means for, operating as a component of an edge terminal of the piconet, detecting a pilot signal from a foreign terminal outside the piconet and determining the strength of the detected pilot signal" and "means for, operating as another component of the edge terminal of the piconet, exchanging messages with the foreign terminal to facilitate establishing a peer-to-peer connection with the foreign terminal if the pilot signal strength is below a threshold," as recited.

Regarding independent claim 46, Gandolfo and Choi fail to support the rejection for at least the reason that, even in combination, they fail to disclose or suggest "based on being designated an edge terminal, listen for pilot signals from isolated terminals not included in the piconet." To reject claim 46, the Office Action (pp. 18-19) uses the same reasoning applied to

reject claim 1, again citing Gandolfo at col. 11, lines 47-58, and denoting element 522a in FIG. 6C as the claimed edge terminal. However, contrary to the Office Action, Gandolfo is completely silent regarding “based on being designated an edge terminal” as recited in claim 46; there is simply no mention of controller 510a *designating* element 522a in any respect. Moreover, Gandolfo contains no hint of the feature “listen for pilot signals from isolated terminals” as further recited in claim 1. Instead, along lines previously discussed, Gandolfo states that “device A-2 522a learns about the existence and settings of network B 505b by monitoring its beacon messages that are forwarded by device B-2 522b”. As noted above, the beacon messages are control signals transmitted by controllers 510a and 510b; they are not pilot signals from device 522b.

Gandolfo and Choi are still further deficient regarding “if a pilot signal with a signal strength below a threshold is detected from an isolated terminal, add the isolated terminal to a peer-to-peer connectivity list, the peer-to-peer connectivity list identifying terminals outside the piconet that can be reached with peer-to-peer transmission,” as additionally recited in claim 46. Along lines previously discussed, Gandolfo and Choi contain no suggestion of any operation based on “if a pilot signal with a signal strength below a threshold is detected” by a designated edge terminal, as in claim 46.

In light of the above, the combination of Gandolfo and Choi clearly does not support the asserted rejection of independent claims 1, 20, 39 and 46. For example, claim 6 recites “the establishment of the peer-to-peer connection comprises negotiating a data rate and transmission power level.” The Office Action alleges (p. 7) that Gandolfo has corresponding disclosure. However, along previous lines, in Gandolfo all operations are controlled by controllers 510a and 510b, and therefore devices 522a and 522b never negotiate in a peer-to-peer fashion. Accordingly, Gandolfo fails to disclose or suggest the features of claim 6. Likewise, Gandolfo is deficient as to claim 25, which recites features corresponding to those of claim 6.

As still another example, claim 47, dependent on claim 20, recites “the controller is further configured to determine whether the communications terminal has been designated as a piconet edge terminal, and if so, enable the receiver to detect the pilot signal.” The Office Action (p. 21) contends

Regarding claim 47, Gandolfo teaches ... *where there is an indirect overlap, at least one controller-enabled device*

*(designated as a piconet edge terminal) from one of the networks 505a, 505b may be capable of forming a child network ....*

(Emphasis in original.) However, along lines previously discussed, Gandolfo is regarding any operation of designating an edge terminal in any respect, contrary to what is alleged in the Office Action. Instead, all aspects of operation are controlled by controllers 510a, 510b.

As yet a further example, claim 48 recites "monitor an exchange of signaling messages pursuant to a call between a local terminal in the piconet, and a remote terminal outside the piconet ... determine whether the call involves high-latency communications ... and if so, provide feedback relating to the call between the local terminal and the remote terminal." The Office Action (p. 22) alleges that the claimed "monitor an exchange of signaling messages pursuant to a call between a local terminal in the piconet, and a remote terminal outside the piconet" is disclosed by Gandolfo at col. 11, line 65 to col. 12, line 7, contending along previous lines that

*Gandolfo teaches in the indirect overlap situation disclosed in FIG. 6C, device A-2 522a learns about the existence and settings of network B 505b by monitoring its beacon messages that are forwarded by device B-2 522b. Device A-2 522a then forwards this information to the controller 510a for network A 505a. Similarly, device B-2 522b learns about the existence and settings of network A 505a by monitoring its beacon messages that are forwarded by device A-2 522a. Device B-2 522b then forwards this information to the controller 510b for network B505b ....*

(Emphasis in original.) However, as discussed previously, the above-noted disclosure of Gandolfo relates to beacon messages generated by controllers 505a, 505b, forwarded by devices 522a, 552b. By contrast, noting that claim 48 depends on claim 20, which recites "a receiver ... operating as a component of an edge terminal of the piconet" and "a controller ... operating as another component of the edge terminal of the piconet," claim 48 recites "a **call** between a local terminal in the piconet ..." (emphasis added). More specifically, the above-noted disclosure of Gandolfo does not describe a **call**, let alone one monitored by components of an **edge terminal** as recited in claim 48.

The Office Action (pp. 22-23) further alleges that Gandolfo's col. 11, line 65 to col. 12, line 7, and in particular, "beacon messages," corresponds to "determine whether the call involves high-latency communications ... and if so, provide feedback relating to the call between the local terminal and the remote terminal," as recited in claim 48. Applicant's representative respectfully disagrees. Nothing in the description of Gandolfo's beacon messages in any way suggests that they are involved in any determination of latency, let alone with respect to a call as recited in claim 48, or still further, providing feedback based on the determination.

For at least the foregoing reasons, withdrawal of the rejection of claims 1, 3-6, 8-11, 13-16, 18-20, 22-25, 27-30, 32-35, 37-39, 41-43, and 46 as being unpatentable over Gandolfo in view of Choi is appropriate.

### **III. Rejection of Claims 7, 12, 26, and 31 Under 35 U.S.C. §103(a)**

Claims 7, 12, 26, and 31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gandolfo in view of Choi, and further in view of Watanabe et al. (US 2002/0080855) ("Watanabe"). Withdrawal of this rejection is respectfully requested for at least the reason that, even in combination, Gandolfo, Choi and Watanabe fail to disclose or suggest all of the claimed features.

Claims 7 and 12 depend on claim 1, and claims 26 and 31 depend on claim 20. Therefore, claims 7, 12, 26 and 31 are allowable over Gandolfo and Choi for at least that reason, as well as for the additional features they recite. Watanabe does not cure the deficiencies in Gandolfo and Choi, being likewise silent, for example, concerning claim 1's "by an edge terminal of the piconet," "receiving a pilot signal from a foreign terminal outside the piconet," "determining a strength of the pilot signal," "exchanging messages with the foreign terminal if the pilot signal strength is below a threshold," and "establishing a peer-to-peer connection with the foreign terminal," and the corresponding features of claim 20.

The combination of Gandolfo, Choi and Watanabe is still further deficient with respect to claims 7, 12, 26 and 31 for the features they recite beyond those of the independent claims. For example, the Office Action (p. 23) correctly observes that Gandolfo and Choi are silent as to claim 7's "the establishment of the peer-to-peer connection further comprises negotiating code to spread peer-to-peer communications," but alleges that Watanabe supplies the disclosure absent

from Gandolfo and Choi, citing Watanabe at par. [0027]. To the contrary, Watanabe does not cure the deficiencies in Gandolfo and Choi. Par. [0027] of Watanabe states in pertinent part:

A carrier having a carrier frequency which is the same as the central frequency of a selected communication channel, is primary-modulated by an information signal and then secondary-modulated (spread-modulated) by a pseudo-noise code (spread code). The wireless network includes an ad hoc network for performing a peer-to-peer communication between stations in an area called a BSA (basic service area) and an infrastructure network for performing one-to-many communications among stations through an access point.

It can be seen that there is no suggestion in the above regarding, in particular, “*negotiating code to spread peer-to-peer communications*,” (emphasis added) as recited in claim 7 and 26.

#### **IV. Rejection of Claims 17 and 36 Under 35 U.S.C. §103(a)**

Claims 17 and 36 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gandolfo in view of Choi, and further in view of Papasakellariou et al. (US 7,133,435) (“Papasakellariou”). Withdrawal of this rejection is respectfully requested for at least the reason that, even in combination, Gandolfo, Choi and Papasakellariou fail to disclose or suggest all the claimed features.

Along lines discussed above, claims 17 and 36 depend on claims 1 and 20, respectively, and consequently are allowable over Gandolfo and Choi for at least that reason. Papasakellariou does not cure the deficiencies in Gandolfo and Choi, being similarly silent as to, for example, claim 1’s “by an edge terminal of the piconet,” “receiving a pilot signal from a foreign terminal outside the piconet,” “determining a strength of the pilot signal,” “exchanging messages with the foreign terminal if the pilot signal strength is below a threshold,” and “establishing a peer-to-peer connection with the foreign terminal,” and the corresponding features of claim 20.

**V. Rejection of Claims 44 and 45 Under 35 U.S.C. §103(a)**

Claims 44 and 45 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gandolfo in view of Choi, and further in view of Icacono et al. (US 2005/0176468) (“Icacono”). Withdrawal of this rejection is respectfully requested for at least the reason that, even in combination, Gandolfo, Choi and Icacono fail to disclose or suggest all the claimed features. Claims 44 and 45 depend on claims 1 and 20 respectively, and therefore Gandolfo, Choi and Icacono do not support the rejection for at least the reason that even in combination, they fail to disclose or suggest the features of claims 1 and 20 discussed previously.

**CONCLUSION**

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [QUALP842US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,  
TUROCY & WATSON, LLP

/William Curry/  
William Curry  
Reg. No. 43,572

TUROCY & WATSON, LLP  
127 Public Square  
57<sup>TH</sup> Floor, Key Tower  
Cleveland, Ohio 44114  
Telephone (216) 696-8730  
Facsimile (216) 696-8731